This listing of claims will replace all prior versions, and listings, of claims

in the application:

Listing of Claims:

1-15. (Canceled)

16. (Previously Presented) A semiconductor laser device with a spot-

size converter comprising:

a semiconductor substrate;

a semiconductor laser region, and

a semiconductor layer;

the semiconductor laser region and the semiconductor layer being

integrally formed as one unit on the semiconductor substrate in a lateral

direction to emit light from the side of the semiconductor layer;

the semiconductor layer has a function of changing the spot-size in a layer

direction of light emitting from a semiconductor laser by changing a refractive

index of the semiconductor layer in the layer direction;

wherein the semiconductor layer is a graded index to gradually change a

refractive index thereof in a layer direction.

17. (Canceled)

18. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 16, wherein at a time of passing light emitting

from the semiconductor laser region through the semiconductor layer, the spot-

size of light is periodically changed or shows a behavior of a portion of the

periodical changing.

19. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 16, wherein the most highest region of refractive

index of the semiconductor layer is one conformed with an approximate central

portion of a distribution of light emitting from the semiconductor laser region.

20. (Canceled)

21. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 18, wherein the most highest region of refractive

index of the semiconductor layer is one conformed with an approximate central

portion of a distribution of light emitting from the semiconductor laser region.

22. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 16, wherein on the boundary between the

semiconductor layer and the semiconductor laser region, a second

semiconductor layer having a substantially constant refractive index is formed.

23. (Canceled)

24. (Previously Presented) The semiconductor laser device with a spot-

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size converter according to claim 18, wherein on the boundary between the

the semiconductor laser region, semiconductor layer and

semiconductor layer having a substantially constant refractive index is formed.

(Previously Presented) The semiconductor laser device with a spot-25.

size converter according to claim 19, wherein on the boundary between the

semiconductor region, layer and the laser semiconductor

semiconductor layer having a substantially constant refractive index is formed.

26. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 16, wherein on the boundary between the

semiconductor layer and the semiconductor laser region, a dielectric layer is

formed.

27. (Canceled)

(Previously Presented) The semiconductor laser device with a spot-28.

size converter according to claim 18, wherein on the boundary between the

semiconductor layer and the semiconductor laser region, a dielectric layer is

formed.

(Previously Presented) The semiconductor laser device with a spot-29.

size converter according to claim 19, wherein on the boundary between the

semiconductor layer and the semiconductor laser region, a dielectric layer is

formed.

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30. (Canceled)

31. (Currently Amended) A semiconductor laser device with a spot-

size converter comprising:

a semiconductor substrate;

a semiconductor laser region;

a light waveguide region;

the semiconductor laser region and the light waveguide region being

integrally formed as one unit on the semiconductor substrate in a lateral

direction to emit light from the light waveguide region;

at a joint region between the semiconductor laser region and the light

waveguide region, a semiconductor layer is buried therein;

wherein the semiconductor layer has a refractive index which is

substantially costantconstant.

32. (Canceled)

33. (Currently Amended) The semiconductor laser device with a spot-

size converter according to claim 31, A semiconductor laser device with a spot-

size converter comprising:

a semiconductor substrate;

a semiconductor laser region;

a light waveguide region;

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the semiconductor laser region and the light waveguide region being

integrally formed as one unit on the semiconductor substrate in a lateral

direction to emit light from the light waveguide region;

at a joint region between the semiconductor laser region and the light

waveguide region, a semiconductor layer is buried therein;

wherein the semiconductor layer has a refractive index which is changed

continuously in a layer direction or varied step wise.

34. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 31, wherein the most highest region of refractive

index of the semiconductor layer is one conformed with an approximate central

portion of a distribution of light emitting from the semiconductor laser region,

and with an approximate central portion of an intrinsic mode of the light

waveguide region.

35. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 31, wherein on the boundary between the

semiconductor layer and the semiconductor laser region and/or the boundary

between the semiconductor layer and the light waveguide region, another

semiconductor layer having a refractive index which is substantially constant is

formed.

36. (Canceled)

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37. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 33, wherein on the boundary between the

semiconductor layer and the semiconductor laser region and/or the boundary

between the semiconductor layer and the light waveguide region, another

semiconductor layer having a refractive index which is substantially constant is

formed.

38. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 34, wherein on the boundary between the

semiconductor layer and the semiconductor laser region and/or the boundary

between the semiconductor layer and the light waveguide region, another

semiconductor layer having a refractive index which is substantially constant is

formed.

39. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 31, wherein on the boundary between the

semiconductor layer and the semiconductor laser region and/or the boundary

between the semiconductor layer and the light waveguide region, a dielectric

layer is formed.

40. (Canceled)

41. (Previously Presented) The semiconductor laser device with a spot-

size converter according to claim 33, wherein on the boundary between the

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semiconductor layer and the semiconductor laser region and/or the boundary between the semiconductor layer and the light waveguide region, a dielectric layer is formed.

42. (Previously Presented) The semiconductor laser device with a spotsize converter according to claim 34, wherein on the boundary between the semiconductor layer and the semiconductor laser region and/or the boundary between the semiconductor layer and the light waveguide region, a dielectric layer is formed.